

A Web-Based Student Housing Assistant Model

ZYAD ADNAN HAMED

UNIVERSITI UTARA MALAYSIA

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A Web-Based Student Housing Assistant Model

**A thesis submitted to the Graduate School in partial fulfillment of the
requirements for the degree Master of Science (Information Technology)
Universiti Utara Malaysia**

By

Zyad Adnan Hamed (802923)

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KOLEJ SASTERA DAN SAINS
(College of Arts and Sciences)
Universiti Utara Malaysia

PERAKUAN KERJA KERTAS PROJEK
(Certificate of Project Paper)

Saya, yang bertandatangan, memperakukan bahawa
(I, the undersigned, certify that)

ZYAD ADNAN HAMED
(802923)

calon untuk Ijazah
(candidate for the degree of) **MSc. (Information Technology)**

telah mengemukakan kertas projek yang bertajuk
(has presented his/her project paper of the following title)


A WEB-BASED STUDENT HOUSING ASSISTANT MODEL

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Abstract

The World Wide Web presents a global access to an extensive scope of data for a huge number of consumers at the present. It turned out to be the most significant service of the Internet lately. University Utara Malaysia (UUM) is one of the leading public universities in Malaysia. It attracts student from many different countries. We found out after interviewing many international students that they have had many difficulties when they searched for accommodation. This project aims to propose a model of a Web-Based Student Housing Assistant that can be adopted by UUM to be used by the international students in order to help them to find places to stay during their studies. The developed prototype which is named UUM Housing Assistant has been evaluated using TAM based questionnaire. The results of the questionnaire confirmed that the users of the system were pleased and satisfied.

Dedication

*To those who sparked my life ...
All the way up ...
Despite the hard obstacles ...
None has any complaint ...
Ahead of them all ...
None had ever hesitate ...*

*Essentially to my parents who ...
Lovely stood in the front ...
Handling my tears ...
And to my friends who ...
Magically supported my feet ...*

*I dedicate this work to my beloved parents and all of my brothers and sisters
I would also like to express my gratitude to my friends:
As'ad Al-Abboud, Mohamad Osama Ashour, Diao Al-Khatib, Hussam
Jaradat, Jihad Baeth, Mohammed Al-Dourrah, Hussein Salloutah, Omar
and Emad Hamed, Qusai and Malek Al-Zou'bi.*

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Thank you UUM.

Zyad Adnan Hamed

October 26th, 2009

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CHAPTER 1

INTRODUCTION

1.1 Background

The remarkable expansion of the Internet and the World Wide Web exactly has shown the way to an essential group of individuals as well as organizations and other institutions contribute into a large-scale online open market. The fast implementation of the Internet as an intermediate has prompted businesses to identify and introduce the creative methods for promoting their products to clients in computer-mediated surroundings. These improvements happening to the Internet are growing besides the employment of the Internet like an interaction intermediate to a significant vision seeing the Internet as a new marketplace (Ricciuti, 1995).

The World Wide Web has turned out to be the most significant service of the Internet during the recent years. It offers a global access to an extensive scope of data to a huge number of consumers at the present. Since the Web was created with the purpose to sustain cooperation among broadly spread scientists, it presents a platform-autonomous user interface to a worldwide information system.

The contents of
the thesis is for
internal user
only

REFERENCES

- Báez-Franceschi, S., Le, K. & Velez, D. (2004). Web-Based Technologies: Reaching their Ultimate Potential on Restricted Budgets. SIGUCCS '4, Baltimore, Maryland, USA. Pp 336-339.
- Baresi, L. & Morasca, S. (2007). Three empirical studies on estimating the design effort of Web applications.
- Bennet, S., McRobb, S. & Farmer, R. (2006). Object-oriented Systems Analysis and Design using UML. New York: McGraw-Hill.
- Brambilla, M., Ceri, S., Fraternali, P. & Manolescu, I. (2006). Process modeling in Web applications. ACM Transactions on Software Engineering and Methodology (TOSEM), 15(4), 360-409.
- Chang, Y., Hsu, H. & Wang, T. (2008). Action Science Approach to Nonprofit Housing Services using Web 2.0 Mapping Tools. WWW 2008 / Alternate Track: Technology for Developing Regions. April 21-25, Beijing, China, pp. 953-957.
- Davis, F.D. (1989). Perceived Usefulness, Perceived Ease of Use, and End User Acceptance of Information Technology. MIS Quarterly, pp. 319-340.
- Deshmukh, H., Malavia, J. & Carter, w. J. (2003). JAVA WEB COMPONENT DEVELOPER CERTIFICATION.

Gellersen, H. & Gaedke, M. (1999) Object-Oriented Web Application Development. IEEE Internet Computing, 3(1), pp. 60-68.

Gellersen, H., Wicke, R. & Gaedke, M. (1997) WebComposition: An Object-Oriented Support System for the Web Engineering Lifecycle. Electronic Proceedings of The Sixth International WWW Conference, Santa Clara, USA.

Ginige, A. & Murugesan, S. (2001). Web engineering: an introduction. Multimedia, IEEE, 8(1), 14-18.

Hansen, S. (2002). Web Information Systems:- The Changing Landscape of Management Models and Web Applications. Proceedings of the 14th international conference on Software engineering and knowledge engineering - SEKE '02, Ischia, Italy. pp. 747-753.

Hao, J. & Mendes, E. (2006). Usage-based statistical testing of web applications.

Koch, T. & Appelt, W. (1998). Beyond Web Technology - Lessons Learnt from BSCW. Proceedings of the 7th Workshop on Enabling Technologies, IEEE Computer Society, Washington, DC, pp. 176 – 181.

Kothari, C.R. (1985). Research Methodology: Methods and Techniques, Wiley Eastern, New Delhi.

Kristensen, A. (1998). Developing HTML based Web Applications. 1st International Workshop on Web Engineering, WWW7 Conference, Brisbane.

- Kuřach, B. & Tokarz, K. (2008). Implementation of the Web Module for Intelligent Housing System based on a single-chip microcomputer. Proceedings of the 2008 1st International Conference on Information Technology, IT 2008, 19-21 May, Gdansk, Poland, IEEE.
- Liang, J., Zhang, Y., Lu, J., Sathulla, S., Chen, D. & Wang, S. (2008). A Rental Advising System based on Service Oriented Architecture. IEEE Congress on Services Part I, IEEE Computer Society, Washington, DC, pp. 184 – 190.
- Lin, J. & Lu, H. (2000). Towards an understanding of the behavioural intention to use a web site. International Journal of Information management, 20, pp 197-208.
- Moon, J. & Kim, Y. (2001). Extending the TAM for a World-Wide-Web context. Information and Management 38, pp 217-230.
- Nambisan, S. & Wang, Y. (1999). Roadblocks to Web Technology Adoption. Communications of the ACM, 42(1). Pp 98-101.
- Nourie, D. (2006). Java Technologies for Web Applications [Electronic Version] from http://java.sun.com/developer/technicalArticles/tools/webapps_1/.
- Redouane, A. (2002). Guidelines for Improving the Development of Web-Based Applications. Proceedings of the Fourth International Workshop on Web Site Evolution (WSE'02).
- Ricciuti, M. (1995). Database vendors hawk wares on Internet. InfoWorld, 17(2), pp. 10.

- Romano, B., Liddick, W. & Meale, D. (2006). On-Campus Housing Management Made Easy. National Association of College Auxiliary Services. Retrieved July 12, 2009 from <http://www.starrez.com/NACAS-Cornell-Starrez.pdf>
- Vaishnavi, V. & Kuechler, W. (2007). Design Science Research Methods and Patterns. NY: Auerbach Publications, USA.
- Venkatesh, V. & Davis, F. (2000). A Theoretical Extension of the Technology Acceptance Model: Four Longitudinal Field Studies. *Management Science*, 46(2), pp 186-204.
- Williams, J. (2003) The Web services debate: J2EE vs. .NET. *Communications of the ACM*, 46(6). pp 58-63.
- Wu, Y. & Offutt, J. (2002) Modeling and testing web-based applications. GMU ISE Technical Report.
- Zhao, W., Kearney, D. & Gioiosa, G. (2002). Architectures for Web Based Applications. 4th Australasian Workshop on Software and Systems Architectures (AWSA), Australia.